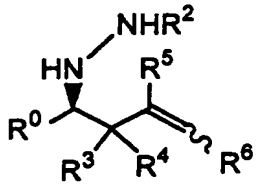
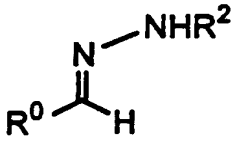
WHAT IS CLAIMED IS:

1. A method for producing enantioselectively allylated N-acylhydrazine represented by the following general formula (3):



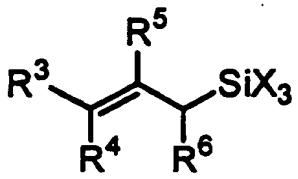
[3]

wherein R^0 represents an optionally substituted hydrocarbon group, an optionally substituted heterocyclic group, or $-COOR^1$ (where R^1 represents a hydrocarbon group); R^2 represents an acyl group; R^3 and R^4 each represent a hydrogen atom, or one of R^3 and R^4 represents a hydrogen atom and the other represents a hydrocarbon group; R^5 and R^6 each independently represent a hydrogen atom or a hydrocarbon group; and R^4 and R^6 may together form an alkylene ring or a heterocycle, the method characterized by reacting, in the presence of chiral phosphine oxide, N-acylhydrazone represented by the following general formula (1):



[1]

wherein R^0 and R^2 are as defined above,
with an allylating reagent represented by the following general formula (2):

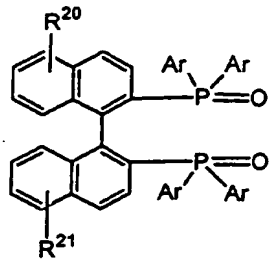


[2]

wherein R^3, R^4, R^5, and R^6 are as defined above; R^4 and R^6 may together form an alkylene ring or a heterocycle; and three Xs each represent a chlorine atom or a bromine atom, or two of the three Xs each represent a chlorine atom or a bromine atom and the other one represents an alkyl group.

2. The method according to claim 1, wherein R^0 in the general formulas (1) and (3) is $-COOR^1$ (where R^1 represents a hydrocarbon group).

3. The method according to claim 1 or 2, wherein the chiral phosphine oxide is (R)- or (S)-2,2'-bis(diarylphosphino)-1,1'-binaphthyl dioxide represented by the following general formula (4):



[4]

wherein R^{20} and R^{21} each independently represent a hydrogen atom, an alkyl group, an alkoxy group, or a halogen atom; and Ar represents an aryl group.

4. The method according to claim 3, wherein R^{20} and R^{21} in

the general formula (4) each represent a hydrogen atom.

5. The method according to claim 3 or 4, wherein Ar in the general formula (4) is a phenyl group.

6. The method according to claim 3 or 4, wherein Ar in the general formula (4) is a tolyl group.

7. The method according to any one of claims 1 to 6, further comprising adding phosphine as an additive to the reaction system.

8. The method according to claim 7, wherein the phosphine is trialkylphosphine, triarylphosphine, or alkyldiarylphosphine.

9. The method according to any one of claims 1 to 8, wherein the allylating reagent represented by the general formula (2) is crothyltrichlorosilane.

10. The method according to any one of claims 1 to 8, wherein the allylating reagent represented by the general formula (2) is 2-methyl-2-butenyltrichlorosilane.

11. The method according to any one of claims 1 to 8, wherein the allylating reagent represented by the general formula (2) is allyltrichlorosilane.

12. A method for producing alloisoleusine, which uses as a key reaction, the asymmetric allylation reaction according to

the method of any one of claims 1 to 9.